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Canine trypanosomiasis in a non-descript dog: A case report

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Abstract
A six-year-old male mongrel dog, weighing 26 kg was presented to Veterinary Clinical Complex of NTR College of Veterinary Science, Gannavaram with the history of inappetence, pyrexia, bilateral blindness accompanied by hyphema and mild corneal opacity, as well as significant weight loss for the past four days. Clinical examination revealed elevated rectal temperature (103.9ºF), pallor mucous membranes, enlarged lymph nodes, tachycardia and lack of menace reflex in both the eyes. Haemato-biochemical examination indicated anemia, neutrophilia, hypoglycemia and slightly elevated total bilirubin. Microscopic evaluation of the wet blood film revealed motile Trypanosomes, while the Giemsa-stained blood smear showed a massive infection of Trypanosomes. Based on the diagnostic evaluation the case was confirmed as canine trypanosomiasis. The animal was successfully treated with a single intramuscular dosage of diminazene aceturate at a rate of 3.5 mg/kg body weight, along with supportive care. The dog showed recovery following a week-long course of treatment.

Keywords: Anemia, canine trypanosomiasis, dog, diminazene aceturate, parasite

Introduction
Trypanosomiasis is a haemoprotozoan disease caused by various species of Trypanosoma, an extracellular parasite that affects both domestic and wild animals (Agrawal *et al*., 2020) [1]. Canine trypanosomiasis is classified into two main forms: the American form (Chagas disease), caused by *Trypanosoma cruzi* infection, and the African form (sleeping sickness or surra), caused by *Trypanosoma evansi* (Haritha *et al*., 2024) [7]. However, in the Indian subcontinent, canine trypanosomiasis is primarily caused by *Trypanosoma evansi* (Behera *et al*., 2018) [4] and has been recorded the prevalence of *T. evansi* in dogs has been recorded in various regions, including Madhya Pradesh (7.69%), Andhra Pradesh (2.40%) and Kerala (2.7%) (Rangaswamy *et al*., 2024) [10]. *Trypanosoma evansi* causes chronic disease (Surra) in camels and horses, but in dogs, it is usually acute and fatal, causing death within 2 to 4 weeks if untreated (Haritha *et al*., 2024) [7]. The disease is primarily transmitted by various biting flies, including Tsetse, Tabanus, Stomoxys, and Culicoides (Agrawal *et al*, 2020) [1]. During its infectious life cycle, the Trypomastigote form of the parasite immediately enters host cells, proliferates sub-clinically, evades the immune system (Ahmed, 2018), and spreads throughout the host body, primarily within macrophages. Symptomatic parasitemia typically develops within 3-5 days post-infection (Khan *et al*., 2022) [8]. The severity of canine trypanosomiasis ranges from acute and subacute to chronic forms. Clinical signs of Trypanosomiasis are characterized by weight loss, progressive weakness, anorexia, anemia, intermittent fever, conjunctivitis, swelling of the limbs, enlarged superficial lymph nodes, and corneal opacity, which are typical findings in chronic Trypanosomiasis (Thirunavukkarasu *et al*., 2004) [12]. Several effective trypanosomacidal agents are available for dogs, including suramin, quinapyramine, and diminazene. However, a single dose of diminazene aceturate has been shown to be effective in eliminating natural Trypanosomiasis infection in canines (Rani and Suresh, 2007) [11]. The present report places on record a case of canine trypanosomiasis with ophthalmic involvement.

Case history and observations
A six year old male mongrel dog weighing 26 kg was presented to Veterinary Clinical

Complex, NTR College of Veterinary Science, Gannavaram, with the history of inappetence, pyrexia, bilateral blindness accompanied by hyphema and mild corneal opacity, as well as significant weight loss for the past four days. Clinical examination revealed elevated rectal temperature (103.9 °F), pallor mucous membranes, enlarged lymph nodes, tachycardia and lack of menace reflex in both the eyes. Haemato-biochemical examination indicated anemia, neutrophilia, hypoglycemia and slightly elevated total bilirubin. Microscopic evaluation of the wet blood film revealed motile Trypanosomes, while the Giemsa-stained blood smear showed a massive infection of Trypanosomes. Stomatocytes are abnormal red blood cells with a slit-like central pallor surrounded by a dense zone, giving them the appearance of a human mouth. These cells arise from defects in the red blood cell membrane, commonly associated with haemolytic diseases. Based on the microscopic examination, the case was confirmed as canine trypanosomiasis.

Table 1: Haematological profile

Parameter	Pre treatment	Post treatment
Haemoglobin (g/dL)	7.2	8.4
Packed cell volume (%)	19	22
Total erythrocyte count (x 10^6/mm^3)	3.4	3.9
Total leucocyte count (x 10^3/mm^3)	17.2	13.4
Platelet count (x 10^3/µl)	134	142
Differential leucocyte count (%)		
Neutrophils (%)	78	64
Lymphocytes (%)	18	34
Monocytes (%)	3	2
Eosinophils (%)	1	0

Table 2: Serum biochemical profile

Parameter	Pre treatment	Post treatment
Total bilirubin (mg/dL)	0.72	0.5
ALT (IU/L)	25	24
AST (IU/L)	28	32
Total protein (g/dL)	6.10	6.8
Albumin (g/dL)	3.32	4.2
Globulin (g/dL)	2.78	2.6
Creatinine (mg/dL)	1.20	1.12
BUN (mg/dL)	34	28
Glucose (mg/dL)	57	72

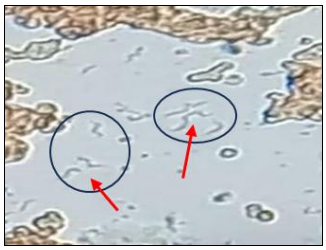

Fig 1 Photomicrograph of Trypanosomes in wet blood film examination

Fig 2: Photomicrograph of Trypanosomes in the Giemsa-stained peripheral blood smear

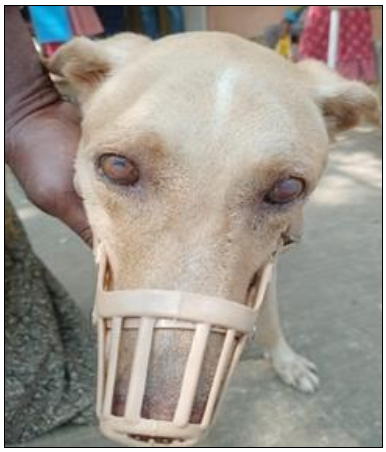

Fig 3: Bilateral corneal opacity in the affected dog

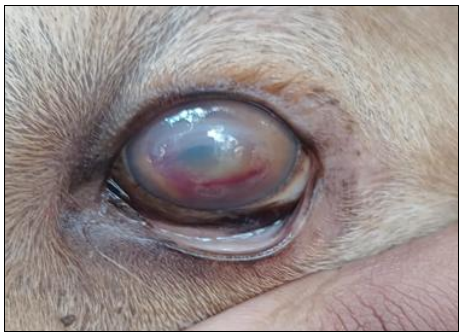

Fig 4a: Before therapy

Fig 4b: After therapy

Treatment

The dog was treated with Diminazine aceturate (3.5 mg/kg IM, once), DNS (10 ml/kg IV), Oxytetracycline (10 mg/kg IV), Meloxicam (0.3 mg/kg IV), and Chlorpheniramine maleate (0.5 mg/kg IM) for infection and supportive care. Oral hematinic (Syp. aRBCe® 5 ml BID), styptics (Tab. K-stat® 250 mg BID), and Ofloxacin eye drops (2 drops in each eye, BID) were also administered over a five-day course. By day two, temperature was normal (102.1°F), and the dog was alert and active. Appetite returned on day three and full recovery was noted by day five, and corneal clarity restored by day seven, alongside near-normal hemato-biochemical parameters. Blood smears were negative for Trypanosoma sp. by the end of treatment.

Discussion

A Higher prevalence of *T. evansi* infection was observed in Mongrel compared to Pomeranian, Cross breeds, German Shepherd, Doberman and Labrador breeds (Prasad *et al.*, 2015). The clinical signs observed in the present study are consistent with those reported by Behera *et al.* (2018) [4], Khan *et al.* (2022) [8] and Dhakane *et al.* (2024), who also noted anorexia, corneal opacity, high temperature, gradual

weight loss and lymph node enlargement. Chandrasekar *et al*. (2016) reported that corneal opacity results from parasites descending along the optic artery, leading to immune complex formation in the aqueous humor, which creates granular deposits that cloud the cornea and impair vision. Aref *et al.* (2013) also reported bilateral blindness accompanied by hyphema. Microscopic examination of Giemsa-stained blood smears and wet film examinations are diagnostic tools used for detecting Trypanosoma infections. However, distinguishing between Trypanosoma species can be challenging, highlighting the need for serological and molecular tests to accurately identify the species (Haritha *et al*., 2024) [7]. Anemia in the present case report was in agreement with earlier reports of Haritha *et al.* (2024) [7] and Rangaswamy *et al.* (2024) [10] who opined that anemia might be caused by haemolysis due to erythrophagocytosis, haemodilution, and suppression of erythropoiesis. Neutrophilia in the present case report might be due to secondary bacterial infections. Hypoglycemia and elevated bilirubin values were also reported by Khan *et al*. (2022) [8]. Hypoglycemia occurs due to the utilization of blood glucose by circulating parasites. Most of the literature reports the single use of Diminazine aceturate at a dose of 3.5 mg/kg body weight administered intramuscularly (Rani and Suresh, 2007 and Agrawal *et al*., 2020) [11, 1]. Uneventful clinical recovery was observed after a week of therapy. Similar clinical recovery within one week was reported by Agrawal *et al.* (2020) [1] and Haritha *et al*. (2024) [7] in Trypanosoma positive dogs.

Conflict of Interest
Not available

Financial Support
Not available

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